

THE ZOOLOGIST

No. 767.—May, 1905.

THE LARGEST SKELETON OF A DINOSAUR.

By W. J. HOLLAND, Director of the Carnegie Museum.

(PLATE III.)

ON May 12th, at 1 p.m., Mr. Andrew Carnegie formally presented to the Trustees of the British Museum (Natural History), South Kensington, a reproduction of the skeleton of *Diplodocus carnegii*, Hatcher. The original, of which the specimen in the Natural History Museum is a replica, is in the Carnegie Museum at Pittsburgh. The larger portion of the skeleton represents a specimen which was discovered, in the summer of 1899, on Sheep Creek, Wyoming. In the summer of 1900 a second skeleton, not as complete as the first, was found on land immediately adjacent to that on which the original discovery had been made. In the summers of 1902 and 1903 two other specimens of *Diplodocus* were discovered in the Bighorn Mountains in Wyoming, and out of the material furnished by these four it has been possible for the writer and his associate, the late Prof. J. B. Hatcher, to reconstruct the entire skeleton. What one specimen lacked the other supplied, and, while not every point is as yet absolutely ascertained in relation to the collocation of some of the bones of this colossal beast, it is certain that we know far more about it than is known of the structure of any other similar great creature of the past, unless it be *Iguanodon*.

bernissartensis, of which a great many skeletons have in recent years been found in Belgium, some of them in remarkably perfect condition.

The replica installed in the Gallery of Reptiles at the Natural History Museum does not represent, in a single portion, the work of the human imagination, every bone there represented being matched by a corresponding original. In this respect the restoration is unique.

The vertebral column is 84 ft. in length. As it stands in the Gallery of Reptiles the specimen is 80 ft. in length over all, the curves in the vertebral column, as it is mounted, accounting for the loss in length. The height of the specimen, from the top of the base to the top of the spines of the dorsal vertebræ, is nearly 14 ft. The animal possessed a remarkably long neck, and a still more remarkably long tail. The tail, gradually diminishing in thickness, terminated in a long whip-like extremity. It has been interesting to the writer to ascertain, since his visit to England, that *Ceteosaurus leedsi*, portions of the skeleton of which are installed in the Department of Geology at the British Museum, also had a similar whip-like prolongation of the tail, and it is known that this was characteristic of yet two other genera of sauropodous Dinosaurs. What the use of this enormous prolongation of the tail may have been it is only possible to surmise. It is not, however, relatively any longer than is the case in some of the Lacertilia of the present day. The number of caudal vertebræ in the replica is seventy-three. In *Varanus niloticus* there are one hundred and more caudal vertebræ. The skull of *Diplodocus* was, as is true of all the sauropodous Dinosaurs, very small in comparison with the bulk of the animal. The teeth are small, and plainly intended for use in securing vegetable food. It has been suggested that the animal fed upon soft, succulent, aquatic vegetation, which it gathered in the lagoons and estuaries which it haunted. The feet were huge in size, and, as comparative anatomists say, were entaxonic—that is, the longest toes were placed on the inside of the foot. In this respect the feet resemble those of the great Ground Sloths of a subsequent geological period—the *Megatherium* and the *Mylodon*.

The gift of this replica to the British public was made by



Mr. Carnegie, in response to a suggestion of His Majesty, King Edward VII., who, upon the occasion of a visit to Skibo Castle, saw a drawing of the skeleton, and expressed a wish that the huge monster might be represented in England.

The task of producing the restoration occupied the time of from three to four men for two years. The work was done in the palæontological laboratory of the Carnegie Museum by Mr. Arthur S. Coggeshall, the chief preparator, and his assistants. The cost of the making of the restoration, as well as of the bases



Restoration of *Diplodocus*, modelled by Dr. W. J. Holland.

on which it stands, was generously defrayed by Mr. Carnegie at a very large expense.

The specimen is the longest and most perfect representation of a sauropodous Dinosaur in existence anywhere in the world at the present time. The skeleton is nearly twenty feet longer than that of the Brontosaurus, a restoration of which was made in New York recently, and at the first public exhibition of which Dr. Henry Fairfield Osborn kindly invited his friends to meet him at what he facetiously styled a "Dinosaur tea."

DIARY OF OBSERVATIONS ON A YOUNG CUCKOO
(*CUCULUS CANORUS*).

By J. H. GURNEY, F.Z.S.

May 22nd, 1904.—A boy found a Cuckoo's egg with three Hedge-Accentor's eggs in nest in a thorn-hedge near my house at Keswick (near Norwich), very convenient to keep under observation. As I had never before had such a good opportunity, I determined to institute a close watch, and see what events would follow.

23rd.—Probably the Cuckoo has already removed one or two of the Accentor's eggs, yet a search into and under the hedge shows no signs of them. The Cuckoo's egg is of an ordinary brown type, as usual not bearing the slightest resemblance to the Accentor's eggs.

30th.—The Accentor has been sitting hard since the 22nd, and it has not been thought safe to put her off more than once a day. The cock Accentor appears occasionally, but no Cuckoo has been seen in the vicinity of the nest, although an old male Cuckoo is often to be heard calling about half a mile away.

31st.—One Accentor's egg is hatched, but the young one has disappeared, and the shell of its egg too, carried away perhaps by the old Accentor.

June 2nd.—8 a.m. First visit to the nest: the Cuckoo's egg is hatched, and its tiny occupant probably already three or four hours old. The two remaining Accentor's eggs are hatched also.

12 a.m. At midday I put off the Accentor for the purpose of examining the Cuckoo. It was entirely devoid of down, of which the nestling Accentors had already considerable tufts on their heads, and seemed very helpless as it lay with its head under the young Accentors. Nevertheless,

when whistled to, it gradually unfolded its long, thin, trembling neck, and opened, in expectation of food, a fairly capacious mouth, which was pale yellow without any spots on the palate. Its skin was everywhere creased and wrinkled, and rather shiny, and it had no hollow in the back. Having made these observations I quickly withdrew, lest the Accentor should forsake her nest.

3rd.—7.15 a.m. Accentor on the nest.

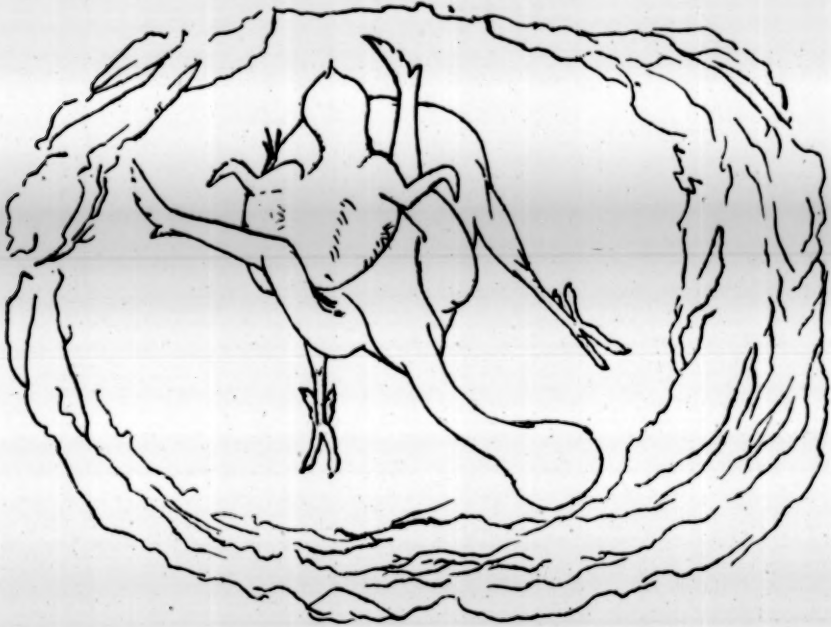
7.45 a.m.	„	„	, but her position changed.
8.15 a.m.	„	„	Changed again.
8.45 a.m.	„	„	„
10 a.m.	„	„	„
12 a.m.	„	„	„

At each visit the Accentor was found to have changed her position to the left; perhaps these repeated changes were to distribute the warmth of her body more equally. On the last visit her body was bunched up in rather a curious way, but what this meant I do not know.

12.30 p.m. For the first time the Accentor had voluntarily left her nest, and, to my surprise, the young Cuckoo was its only occupant. Both the young Accentors lay dead on its edge side by side, but they had evidently been dead only a short time, I am disposed to think not half an hour.

I replaced one of the Accentors in the nest, and watched five minutes, but the young Cuckoo, though very restless, made no attempt to eject it, although it felt it with its wings. The Accentor's nest was rather a deep one, and this and the helplessness of the young Cuckoo, and the fact that the depression in its back was only just perceptible, made me wonder if it was the old Accentors which had ejected their own young; but perhaps not, for the nestling Cuckoos so carefully watched by Dr. Jenner (Phil. Trans. R. S. 1788, p. 225), and Mr. J. Hancock (Trans. North. and Dur. N. H. S. viii. p. 210) ejected young Accentors when they were less than twenty-four hours old in their presence, and my Cuckoo was already at least thirty-two hours. It is clear therefore that it had the power to have done it. Dr. Jenner

even cites an instance of a Cuckoo only two days old which threw out an Accentor seven days old (*l. c.* p. 228, note), which



Cuckoo ejecting nestling Wren.

seems extraordinary; but Jenner is apparently speaking from his own observation in the matter, and the rest of his account is

so admirable that one cannot suspect him of error. An Accentor's feather lay on the hedge by the nest, but there was no evidence of the presence of the old Cuckoo, or of any scuffle, which is said sometimes to take place.

4th.—7.45 a.m. For experiment, I put a Pied Wagtail's egg into the nest, but the young Cuckoo, though very restless, made no attempt to eject it.

7.55 a.m. Removed the Wagtail's egg, and put into the nest a very young live Linnet, whose presence the Cuckoo obviously disliked very much, but it made no attempt to eject it, though hardly ever still, crawling round and about its nest by the aid of its wings, which must possess an extraordinary degree of sensibility, and are used like a child's arms.

2 p.m. Put off the Accentor, and introduced a lively young Wren into the nest, which the Cuckoo immediately



Young Cuckoo's wing on the fourth day.

commenced proceedings against, working round and about it until it had got the bird on to its broad back, in which position the Wren was kept by means of the Cuckoo's long and muscular wings. Then, planting its zygodactyle feet well apart, the little Cuckoo drew itself up until it stood, and three times hoisted the Wren nearly on to the edge of the nest, while my daughters made sketches of the performance. As there are some slight differences in their drawings, it may be well to reproduce both of them.

The young Cuckoo's colour is now slaty brown—in fact, nearly black—very different from the pink flesh tint which Gould has given it in his 'Birds of Great Britain,' which is very incorrect. The *alula spuria*, or bastard wing, has largely developed (see sketch), and its back has grown broader. Its age is about seventy-seven hours.

5th.—8 a.m. Again put the young Wren into the nest,

which the Cuckoo at once hoisted up as before and almost ejected.

2 p.m. Once more put the young Wren into the nest, which the Cuckoo at length got under, and tried to eject, but this was its last performance. As it was only about three days and ten hours old its desire for ejecting other nestlings ceased much sooner than in some of the young Cuckoos experimented upon by Dr. Jenner (*l. c.* p. 226), but it is not to be supposed that strength and vigour is the same in all Cuckoos.

5th.—The Cuckoo, now about four days four hours old, and still the same black colour, is growing fast. The rapidity of its growth is all the more marvellous when one considers the smallness of the egg it has come from—a smallness which must be of great utility to Cuckoos in reconciling the dupe to the charge of their eggs. There is no longer any perceptible cavity in its back, but the creases on its skin are as noticeable as on the day when it was hatched.

7th.—The young Cuckoo now almost fills the nest; its eyes are beginning to open, its ear apertures are large, and the skin of its head and back is blacker than ever. The Accentor is very reluctant to feed it in my presence.

8th.—Weighed the Cuckoo; it is $1\frac{1}{4}$ oz., and is nearly covered with sprouting quills. Its rate of growth has been nearly double that of some young Wrens and Linnets, which after all is not much to be wondered at, for it probably receives the food of five birds.

9th.—The dead nestling Accentor which has been lying beside the nest since the 3rd has disappeared. To see what would happen, I put the other dead Accentor into the nest, but in a few hours it also had gone. To-day, for the first time, an adult Cuckoo was sitting within about forty yards of the nest.

10th.—The young Cuckoo is now old enough to strike at an intruder, an instinct presumably intended to terrify predacious animals, which in some cases might be drawn to the nest by the scent of the dead nestlings. Its appearance at such times is most ferocious, and is eminently calculated to excite fear; even a boy will instinctively draw his hand back, and a Mouse or a small Rat would be frightened away.

16th.—The eyes have now a distinctly sunken appearance, in part due to the erectile feathers of the Cuckoo's head, not noticeable in other birds.

17th.—The Cuckoo experiences a difficulty in breathing, every respiration it takes being distinctly perceptible.

18th.—For the last few days the Cuckoo has changed its position.

22nd.—The Cuckoo, aged twenty days, quitted the nest this afternoon.

23rd.—The Cuckoo nowhere visible, nor was it ever seen again by me.

SUPPLEMENTARY NOTES ON THE ORNITHOLOGY
OF LLEYN.

BY O. V. APLIN, F.L.S.

A GREAT IMMIGRATION.—On the night of the 17th (or rather about one o'clock in the morning of the 18th) March, 1904, a most remarkable migration and destruction of birds took place at Pwllheli. I have drawn up the following account of it from two newspaper reports, and letters from a resident whose husband was at work in the quarry at the time, and from the keeper of St. Tudwal's Lighthouse. The wind was north-east and the night fine at Pwllheli, but at St. Tudwal's the weather was what they call "misty rain," *i.e.* bordering on a fog. The men in the quarry on the Gimblet Rock (Careg yr Imbril), at the entrance of Pwllheli harbour, were working extra time loading vessels, and flares were burning which lit up the whole place. This island-like rock juts out to some extent from the coast-line, and from its height is a very noticeable feature in a long stretch of low coast. Suddenly the workmen were startled by what some have termed a "flow of birds," and others a "shower," descending on the rock. "Thousands of birds dropped on the quarry, the rock, the wharves, and the vessels close to, in a dying state. In a short time the ground was thickly covered with birds, most of them dead or in a dying condition, whilst a cloud of birds hovered in a helpless condition a few yards up in the air. At daybreak the seashore was found strewn with hundreds of birds, evidently drowned at sea, and washed ashore by the tide." This account states that it was an inky dark night, and notices a theory that the birds struck the Rock, which would be between the sea and the place where the flares were burning. Another account said that a shower of birds suddenly fell on the workmen. "Thousands of birds covered the ground in a few minutes—some dead, some half-dead. The vessels at anchor close to the wharf appeared to be instantly covered by birds from stem to stern, every available

space on the riggings, stays, crosstrees, and yards being occupied." Dead birds were found in every direction. "At daybreak the birds on the vessels flew away. Upon inspection there were thousands of dead birds in the quarry, on the top of the Rock, and on the stretch of land that reaches from the Gimblet Rock in the direction of the South Beach." Many of the birds were injured about the head, and there is no doubt but that, having lost their bearings in the thick dark night, and being attracted by the light of the flares, numbers of them struck against the precipitous seaward face of the Rock and other obstacles, while others more fortunate settled down within the influence of the light. The quarryman's wife, writing to me, said:—"On the morfa thousands stood on the rigging and the ropes of the vessels, and they say it was a very grand sight to see the glittering colours in the light. . . . There were birds of every description. Most of them that were on the vessels flew away at daybreak." She adds that there had been a great gale on the Irish coast a day or two before, which did not reach Pwllheli, but the weather came very foggy. As I did not hear of the event until a fortnight after it happened, I had no opportunity of examining any of the victims; but the following species were mentioned in the papers:—Starling, Thrush, Blackbird, Snipe, Woodcock, Robin, Curlew, and Kingfishers; the last named seems a very unlikely one to occur in such a way, and possibly a mistake was made. At St. Tudwal's Lighthouse the same night they had lots of Starlings, Blackbirds, and Redwings about the light, but saw no other birds; there were, however, more Blackbirds than the keeper ever saw at one time previously. He notices that the Starling strikes more frequently than any other bird.

RICHARDSON'S SKUA.—Dr. A. M. McAlldowie, of Stoke-on-Trent, writes me word that he saw a white-breasted adult of this species near the Gimblet Rock, Pwllheli, on June 23rd, 1901, the morning after a storm. Also that in June, 1903, he found a dead specimen on the beach near Pwllheli, which, with Puffins and Razorbills, had apparently been washed up in a storm some time previously.

FIRE-CRESTED WREN.—At the sale at Stevens's (May 12th, 1904) of the final portion of the collection formed by Mr. E. Bidwell, lot 244 consisted of a Firecrest, male, March 24th, 1878,

near Pwllheli, and stated in the catalogue, but erroneously, to be the only Welsh-killed specimen.

PUFFIN. — The evidence that the Puffin formerly bred on Bardsey, to be found in Ray's 'Itineraries,' is certainly stronger than I thought it was. Ray and Willughby were both at Aberdaron, and crossed over to Bardsey ("a pretty little spot, rented for £50 per annum") on May 29th, 1662; and the former states: "There build the Prestholm puffin, sea-pies, and some other birds." He doubtless knew the Puffin by sight, for just a week before he had landed on Puffin (or, as he calls it, Prestholm) Island, he records that "in the island (Prestholm) are bred several sorts of birds, two sorts of sea-gulls, cormorants, puffins, so called there, which I take to be *Anas arctica clusii*, razor-bills and guillemots, scraies two sorts, which are a kind of gull." Scraies are Terns—"a name, I conceive, framed in imitation of their cry: For they are extraordinarily clamorous" (*vide* Willughby's 'Ornithology'). When at Pwllheli, Ray records that "They have a tradition in Wales about the puffins, that they cannot fly if they be out of sight of the sea-water; their wings are very small, and yet they fly swiftly, but seldom very high." C. F. Cliffe, who in or slightly earlier than 1850 visited Bardsey, says that the very precipitous seaward face of the hill on the north-east was "in summer a great resort of puffins and other sea-birds." But, although Cliffe often mentions the sea-birds of Wales, there is nothing to show that he had any especial knowledge of ornithology. If the birds were only seen at a distance it would be easy for a casual observer to mistake a row of Guillemots or those birds on the sea for Puffins, the name of which, then as now, seemed to come more readily to the local people's mouths than those of the other Auks. Bardsey, of course, might have held a Puffin-warren in the latter half of the seventeenth century (though I do not think it very likely), and been afterwards deserted. But I cannot understand how, if the birds were there as late as fifty years ago, I never heard anything of them. Still it may have been so. Information does not come readily to an Englishman from people who talk little of his language, and dislike it also. Ray, indeed, great naturalist that he was, always concerned himself more with plants than birds, and it is interesting to find that he noticed the abundance of the pretty

little Vernal Squill, still one of the attractions of Bardsey and the cliff-tops of Lleyn, which would have been in full bloom at the time of his visit. "We found," he writes, "a kind of *Hyacinthus stellatus vernus* growing there in great plenty."

I was in Lleyn for a day at the end of May, 1903, and went to the Bird Rock. I saw nothing new there, but was able to realize from what took place there during a couple of hours, the amount of plunder, robbery, and violence which goes on at a great (and mixed) breeding station during the season. The Kittiwakes and Guillemots were just laying, and, just as I was pointing out a green egg of the latter to a companion, a Herring-Gull alighted on the ledge and carried it off. I saw another waddle along a ledge and clear out the eggs in a Kittiwake's nest; and on the flat-topped stack a Cormorant seized a Guillemot by the neck, and, after shaking it like a Rat, and beating its life out and hammering it on the rocks for some time, flew out with it and settled on the sea, probably in order to try and wash it down. We could not see if this was a success, but heartily wished the Cormorant might be choked. The numerous Jackdaws passing to and fro doubtless keep an eye open for any egg they can snatch; and, unless they are much better behaved than their relatives in the midlands, I should fancy that a pair of Crows which haunt the rock must be a considerable cause of anxiety to the paler-coloured part of the population. Still, they can hardly be worse than some of the "beautiful harmless white-winged" Gulls, and one almost wonders that, knowing their own and their friends' characters, birds should like to be such near neighbours. But the robbery here is probably like the jobbery in some other assemblies; they are all in it, and so none complain.

The country in Lleyn was much more forward than in Merioneth. I saw two Bullfinches at Bodfean, and heard a Blackcap there, and more than one Chiffchaff; also the Grasshopper-Warbler at Nevin. There were young Swans in the nest by the bridge near Pwllheli. On the edge of the Afon Wen mere we saw, from the train, a Common Sandpiper, and I think it very probable that the bird breeds there.

NOTES OF BIRDS OBSERVED AT BALBRIGGAN IN
1903-04.

BY REV. CHARLES W. BENSON, LL.D., Rector of Balbriggan.

BALBRIGGAN is a maritime town, twenty-two miles north-east of Dublin. It owes its origin to the late Baron Hamilton, who in 1780 built the pier and breakwater which enclose its small harbour, admitting steamers drawing twelve feet of water. Its population is 2443, most of whom are engaged in the manufacture of the stockings which have made the town famous.

Balbriggan is said to be the driest town in Ireland, and it is certainly a very healthy and bracing place, and were there only greater bathing facilities it would become a favourite summer resort. The view of the Mourne Mountains in clear weather is really magnificent, and the Isle of Man, sixty miles away, is sometimes, though rarely, visible. The shore is low and shingly, though to the north there is a splendid strand as far as the mouth of the Boyne. Inland the country is very flat and rather treeless, so that one cannot expect a large avifauna.

In my two years here I have only observed ninety-eight species, and I fear that I shall not much increase this number. Mr. Spencer, of Tramore, Co. Waterford, tells me that he has observed 141 there, which I should think almost a record for Ireland; but when I was at Horsey Broad, near Martham, Norfolk, years ago, I was told by Mr. Risings that their fauna reached 158. This seems marvellous.

A short distance from the town a shingly beach, covered at high water, extends out some distance from the land, and is called the "Long Leg." It is frequented by crowds of birds, especially in the evenings, when the tide has gone down a little. Five species of Gulls, Cormorants, Curlews, Oystercatchers, Red-shanks, Dunlins, Ring-Dotterels seem to dispute every inch of the peninsula with Rooks, Jackdaws, Lapwings; whilst at sea, not far away, the Scoters and other Ducks seem to be always swimming in little groups of four or five.

About six miles at sea is the rocky island of Rockabill, lat. $53^{\circ} 35' 47''$, long. $6^{\circ} 0' 20''$, exhibiting a flashing light at a height of 148 ft. above high water, visible eighteen miles. A few miles further south is the large island of Lambay; this island has lately been purchased by Hon. Mr. Baring, who will strictly preserve all bird-life there; so that probably there will be a return of many rare birds which formerly bred there. Indeed, I am informed that for the first time for years past the Common Tern bred there in 1904.

Both of these islands are in the track of migrants coming up the channel, and observations taken from them will prove very interesting.

Mr. Barrington, in his great work on the 'Migration of Birds,' records a good many reports from the lightkeepers at Rockabill. The most noteworthy of these seem to be the following, which do not occur on the mainland here:—Common Redstart, Whinchat, Snow-Bunting, Water-Rail, Grey Phalarope, Jack-Snipe.

As I have only been resident here for two years, I have, however, much to learn as regards migration and the occurrence of rare birds in this neighbourhood. The following are those which have occurred in my experience in 1903–04:—

1903.

Feb. 7th.—A Black Redstart (female) in the harbour, perching on the timber cut down for exportation. This bird remained for about three weeks, in company with Sparrows, &c.

May 2nd.—Heard a Grasshopper-Warbler at 7.30 p.m. near Fancourt. Never heard or saw one since.

Sept. 4th.—A White Wagtail at the Delvin River. *24th.* A Hoopoe, *Upupa epops* (male), shot at Lowtherstone by Mr. G. W. Norman. This bird was preserved by Mr. A. Rohu, naturalist.

1904.

April 12th.—Saw a pair of Ray's Wagtails land on the rocks off Fancourt. These birds were not seen here after that day, but on Oct. 31st, Rev. P. C. Hayes, Rector of Raheny, about eighteen miles distant, sent me an immature Ray's Wagtail which he found dead in the bath-room at the rectory.

Nov. 11th.—Black Redstart (male), in good plumage, was seen

by me on the rocks at Fancourt. It must have been passing south, and was not seen again.

I have thought it well only to transcribe my own notes in the following list, as the enumeration of all the very common birds is often uninteresting. I adopt the order of birds in Mr. A. G. More's list of Irish Birds.

LONG-EARED OWL (*Asio otus*).—In Hampton demesne.

BARN-OWL (*Aluco flammeus*).—Often heard at night with its peculiar "kek, kek, kek."

SPOTTED FLYCATCHER (*Muscicapa grisola*).—Fairly common.

REDWING (*Turdus iliacus*).—Not common.

FIELDFARE (*T. pilaris*).—Seen and heard flying overhead. I have not seen any in the fields.

STONECHAT (*Pratincola rubicola*).—Common. I have not met with the Whinchat.

ROCK-PIPIT (*Anthus obscurus*).—Common on the shore.

CORN-BUNTING (*Emberiza miliaria*).—Not common. Heard singing in December.

TREE-SPARROW (*Passer montanus*).—Often observed on the road to Fancourt. Saw a group of five in the autumn. I never observed this bird anywhere else in Ireland except at Howth Junction, where it was pointed out to me by Mr. E. Williams, naturalist.

PARTRIDGE (*Perdix cinerea*).—I have only observed this bird at Fancourt here once.

TURNSTONE (*Streptilas interpres*).—Fairly common.

COMMON SNIPE (*Gallinago caelestis*).—The "drumming" of this bird at the "Bog of the Ring" is very remarkable in the breeding season.

DUNLIN (*Tringa alpina*).—Fairly common, but not as numerous as the Ringed Plover.

SANDERLING (*Calidris arenaria*).—Not common.

COMMON SANDPIPER (*Totanus hypoleucus*).—Breeds near the shore, in little gorges; waterworn.

COMMON REDSHANK (*T. calidris*).—Found almost everywhere about Balbriggan; one of the most common birds.

WHIMBREL (*Numenius phaeopus*).—"May-Bird." Not common; "a passing visitor."

COMMON TERN (*Sterna fluviatilis*).—Constantly seen off shore, but does not breed on mainland.

LESSER TERN (*S. minuta*).—I saw numbers of these birds in 1903, but, strange to say, none in 1904.

BLACK-HEADED GULL (*Larus ridibundus*).—Fairly common. Our harbour-master persists in saying that there are two species.

COMMON GULL (*L. canus*).—Plentiful in winter.

HERRING-GULL (*L. argentatus*).—Common at all seasons.

LESSER BLACK-BACKED GULL (*L. fuscus*).—Not very common.

GREAT BLACK-BACKED GULL (*L. marinus*).—A few pairs only.

KITTIWAKE (*Rissa tridactyla*).—Fairly common all the year round. Called by the coastguards "the Pigeon Gull."

RAZORBILL (*Alca torda*).—Fairly common.

GUILLEMOT (*Uria troile*).—A few only.

GREAT NORTHERN DIVER (*Colymbus glacialis*).—Fairly common in winter. On Nov. 16th, at Cromwell's Harbour, about a mile from this town, I witnessed a most interesting sight—five Great Northern Divers swimming backwards and forwards in the harbour. I watched them carefully for nearly an hour, concealing myself behind a rock; they were not more than fifty yards away. One was leader, and the others followed two by two. Every now and then the leader screamed, diving immediately afterwards, and the four others diving also at the signal. They were all in winter plumage.

RED-THROATED DIVER (*C. septentrionalis*).—Fairly common in winter.

LITTLE GREBE (*Podiceps fluviatilis*).—Common at the "Bog of the Ring," about three miles inland.

CORMORANT (*Phalacrocorax carbo*).—Very numerous. I have not observed the Shaḡ.

GANNET (*Sula bassana*).—Frequently cruising off the harbour in summer.

COMMON HERON (*Ardea cinerea*).—Breeds in Hampton demesne. I once counted sixteen Herons standing close together at the Estuary, Malahide.

WHITE-FRONTED GOOSE (*Anser albifrons*).—I have twice noticed small flocks passing south.

WILD DUCK (*Anas boscas*).—Plentiful at the bog and on the sea.

WIGEON (*Mareca penelope*). — Not common, as there is poor feeding ground here.

TUFTED DUCK (*Fuligula cristata*). — Fairly common in winter.

GOLDEN-EYE (*Clangula glaucion*). — Fairly common at the "Long Leg."

COMMON SCOTER (*Edemia nigra*). — Little parties may be seen every day swimming at some distance from the shore ; once only did I see one on the rocks.

I am by no means satisfied with this list. I hoped to have added before this a good many other birds, some of which have been reported to me, but I have only set down those which I have myself identified.

Oct. 10th, 1904. — I witnessed a most remarkable fight between a female Sparrow-Hawk and a Kestrel. I saw them engage in mortal combat about fifty feet over the shore, and then they fell together, the Kestrel screaming loudly. I hurried to the spot, and got quite close before the Sparrow-Hawk let go her hold and rose into the air, and the Kestrel, which seemed in great terror, got away. I feel sure that but for my arrival it would have been killed.

NOTES AND QUERIES.

AVES.

Early Nesting of Dipper (*Cinclus aquaticus*).—A nest of this species was found by W. Brown, from which four young ones were hatched on March 13th. It was built on a broken brick wall of a mill-sluice, connected with a large cotton mill, within the city.—T. L. JOHNSTON (Carlisle).

Nesting Habits of the Wren (*Troglodytes parvulus*).—I have been much interested in the notes that have appeared in the last two numbers of 'The Zoologist' on this subject. From observations extending over a number of years, I am inclined to think that the primary object of the unlined nests is to protect the birds—both young and old—the young just after they have left the lined nest where they were born, and the old birds in severe weather. Being one of our smallest resident birds, they are easily affected by stormy weather. Often after a sudden night's frost I have found their dead bodies where they have been caught away from their sheltered spots. On one occasion, in a sheltered ravine on an island in the West of Scotland, I found an unlined nest containing the bodies of six mature Wrens; the sixth had its tail and part of its body protruding from the hole in the nest. All the birds had been frozen to death. Wherever we find the habitat of the Wren, we also find one or more of these unlined nests, which are built at various times of the year. I have found them in process of building during the autumn, and they are generally built before the lined nest is begun; in fact, the lined nest is placed in the vicinity of the unlined nest, not the reverse. I have seen them built in all manner of places—in hollow trees, in thatched roofs, in holes in walls, amongst ivy, in beech-hedges, under branches of thick fir-trees, in juniper-scrub, in thick clumps of bracken, between the wings of a dead Crow hanging in a keeper's "larder," in haystacks, and in the out-buildings of farmsteads, &c. Wherever the situation, it has always been a sheltered one, and as a rule the building material has had a wonderful semblance to the surroundings. It has occurred to me of late years that the Wren is not so numerous in the north as it used to be.—J. S. T. WALTON (Sunnyside, Stocksfield-on-Tyne).

Abnormal Nests of the Swallow (*Hirundo rustica*).— My first thought on reading the communication on this subject by Mr. S. G. Cummings (*ante*, p. 121) was "abnormal" or "natural?." True, it is not the common form of nest met with "up along," as we should say "down west," though it is so occasionally. Cf. 'British Birds' Nests,' p. 276, where Mr. Kearton says:—"We discovered several nests in a Surrey bothy last summer that were built against the white-washed wall, and were exactly like those of the Martin, except that the tops were open." In this part of Cornwall, so far as my experience goes, the type of nest described in the article is by far the commonest both in barns, outhouses, and caves, and I fancy this to be a natural form of nest, from which the commoner form in this country has been developed by change of circumstances. Seebohm's remarks ('British Birds,' vol. ii. p. 174), cited but not quoted in the article, exactly describe the type of nest found in this district. After describing the usual nest of the Swallow in this country, he says:—"By far the greater number of Swallows' nests which I have seen in this country have been built in this position and on this model. Curiously enough, this is not the case on the Continent. There the Swallow generally builds against a perpendicular wall, but also only a few inches below some horizontal shelf or roof; in this situation the nest is in the shape of a quarter of a hollow globe of mud. To increase the security of the structure it gladly avails itself of any little projection or nail or peg to begin on. But the usual nest of the Swallow on the Continent only differs from that of the Martin in having the sides as well as the front open instead of built up to the projecting shelf or roof." It is to be noted that the writer, in citing this passage, says: "According to Seebohm this form of construction is not uncommon on the Continent," whereas Seebohm actually says, "generally builds against," and the "usual nest of the Swallow." I would add that, while Kearton says "exactly like those of the Martin," and Seebohm "only differs from that of the Martin," my own experience says, alike in shape, but generally far more untidy from the long straws interwoven with the mud. In an outhouse on a rough whitewashed wall, or in a cave, the general roughness of the site appears sufficient support for commencing operations; on the perpendicular side of a beam any irregularity may be taken advantage of. On the west coast of Scotland, last June (where I find the same continental type of nest), three nests were in building on the perpendicular sides of beams in a cart-house—one, practically finished, begun on a staple, and two on nails, one of which only projected a little over an inch from the beam; and in a boat-house in the same district was a nest in a similar position,

containing a full clutch of eggs, which had been begun on a short length of quarter-inch iron bar, casually pushed under the wall-plate, so that the free end just touched one of the beams, at an angle of about forty degrees. This bar could be removed and replaced without in any way interfering with the stability of the nest. In Cornwall, owing to the abundance of natural situations, many of our birds are not so advanced in their dealings with mankind as in other parts of England, and I should say in this district the greater number of Swallows still keep to the caves around the coasts for their breeding stations. I know several caves, whether sea-caves into which the tide flows, or mine adits emptying out on the cliffs, where many pairs breed every year, and the nests are mostly of the continental type, though varying in shape according to the situation. I have not yet found the flat saucer-shaped nest, typical in the up-country barn. House-Martins' (*Chelidon urbica*) nests cover the face of the sea-cliffs in places, *e.g.* at Cadgwith, and even the ever-present *Passer domesticus* will sometimes prefer holes in a cliff near a village to the actual dwellings of man.—H. HOLROYD MILLS.

Abnormal Nests of the Swallow.—With regard to Mr. S. G. Cummings's article (*ante*, p. 121), a pair of Swallows (*Hirundo rustica*) built a nest in a sort of outhouse here two or three years ago, which was without any support beneath it. The nest has now fallen down, but a brood was hatched, and the mark of it can still be seen. It was placed against a very smooth brick wall just under the whitewashed ceiling, and was very like a House-Martin's (*Chelidon urbica*), except that it had more roots and straws with the mud. Several years before a similar unsupported nest was built by Swallows, which was fixed against the beams in a shed in a paddock here, and which exactly resembled the nest in fig. 2. I am inclined to think that these nests, without a ledge to rest on, are a good deal commoner than is supposed. — HAROLD RUSSELL (The Ridgeway, Shere, Surrey).

Nesting Habits of the Swallow.—In the fen-country between Peterborough and Wisbech nests of the common Swallow are not infrequently built under the bridges which carry roads across the drains, or "dikes," as they are called locally. These nests are built against the smooth brickwork of the bridge, and are necessarily without support of any kind from below. Two occupied nests which I saw under one bridge in Whaplode Drove, in June, 1885, were only a few inches above the water-line; the span of the arch at water-level was three feet, and the keystone barely two feet from the water. In 1898 I noticed two Swallows' nests on the rocks in the large artificial cave

which constitutes the entrance to the disused copper-mines at Alderley Edge, Cheshire, but in the dim light could not see whether they were of the usual type and built upon ledges, or whether the lower rim was unsupported by projection or inequality of surface, as is the case in the nests beneath the low brick bridges in the fens.—CHARLES OLDHAM (Knutsford).

Movement of Young Nightjars (*Caprimulgus europæus*).—Not by any means the least fascinating and useful part of wild-bird photography is that most exceptional opportunities are given for learning the habits of birds. Mr. J. H. Gurney (*ante*, p. 88) is puzzled to account for the fact that young Nightjars are frequently found a yard or more from the spot where they were hatched, even so soon as the day after hatching, and suggests that they are probably carried in the mouth of the old bird. I can assure him that even when but a day old these quaint little creatures are quite capable of traversing unaided the distance mentioned. I have several times during the last four years spent pleasant hours concealed, with my camera, beneath a bower of branches, and within six feet of the home of these interesting birds, almost always after the young were hatched, and at least on two occasions when they were not more than a day old. A description of what took place on one of the latter occasions may be taken as typical of all, irrespective of the age of the young birds. Before creeping into the bower, which had been previously prepared, I made some photographs of the young birds, which appeared incapable of walking or even standing upright. After I was carefully concealed, with my camera, beneath the branches, so that no part of the apparatus except the lens or of my clothing was visible from outside, I had to wait about twenty minutes before the old bird returned. She flew straight down to the ground, alighting about a yard from the young ones, and, catching sight of the lens, hesitated. After a minute or two she gave utterance to a peculiar crooning sound, something like the croaking of a Frog, but softer, and more like a hoarse whisper. Immediately the two little birds, which had appeared quite inanimate, became very much alive, and—to use an expression which most nearly describes their method of progression—toddled at a great rate to their mother, who took them partly under her forward breast-feathers. This was interesting to watch, but not conducive to my obtaining photographs of the old bird, as it was necessary to turn the camera round a point and refocus, not an easy matter under the circumstances without alarming the old Nightjar. I did, however, succeed in making some good studies of this bird; but, in photographing Nightjars, I have

always been troubled with this habit they have of calling the young to a fresh spot.—WM. FARREN (Regent Street, Cambridge).

The Sounds produced by the Long-eared Owl (*Asio otus*).—Mr. Howard Saunders, in his 'Manual,' says, with reference to this bird: "The young utter a loud mewling, and the old birds occasionally make a barking or 'quacking' noise, both while on the wing and also when perched; but as a rule this species is rather silent, and certainly does not 'hoot' like the Tawny Owl." Other works on ornithology that I am able to consult say little or nothing on the subject, though Mr. W. Swaysland, in 'Familiar Wild Birds,' comes nearest, I think, in his word-spelling of the note, which he says "may be said to resemble the syllable 'hoo-ok.'" As I have often listened to the strange sounds produced by this bird, I will now attempt briefly to describe them.

Sound No. 1 I have heard at 5 p.m. on Jan. 9th, and 7 p.m. on March 29th; on the latter date and hour when Thrushes and Black-birds were in full song. By quietly listening just outside a fir-plantation I heard the first sounds of the awakening Owls—"oo-woo, oo-woo"—a low faint coo rather than a hoot. Sometimes, when one is within a very few yards, it sounds like "roo-oo" or "whr-oo." It is no louder and somewhat suggestive of the coo of the domestic Pigeon, and, I should think, could not be heard at a greater distance than fifty yards, even when heard under the most favourable circumstances. It is thus infinitely less loud than the hoot of the Tawny Owl (*Syrnium aluco*), which I think might be heard a mile away. But the former species calls much more frequently—indeed, one might say continuously—for a considerable time after it has uttered the first sound.

Sound No. 2.—This is about as musical as the noise made by a scratchy slate-pencil drawn vertically across a slate; "kyiark" is the best word-representation I can make of it. A bad violin might produce it, and it might be described as harshly cat-like. The young birds (nestlings) make this same sound even more shrilly, but I think not so loud. I have heard it in January, when, of course, there are no young birds.

Sound No. 3, which I regard as the most remarkable, I feel quite certain is produced by the bird's wings being brought into contact under the body whilst the bird is in flight, and that it is *only produced in this way*. I have heard the sound on several occasions when there has been quite sufficient light to enable me to note every stroke of the bird's wings as it sailed about over and close to the tops of the low spruce-firs, which here are its favourite haunts. The noise thus produced sounds like "bock," and is heard every time the bird's widely

swept wings seem to come in contact beneath the body. I have not timed the wing-beats by a watch, but the intervals seem to be about one second. Whilst these sounds are being produced the flying bird is always over the tops of the trees in which other birds continue to make the faint hoot, or No. 1 sound, and it is thus possible that the wing-clappings are in answer to the hoots. Perhaps the females are the hooters, and the males the clappers. The clapping is the loudest sound made, and might be heard at double the distance that one could hear either of the other sounds. I have not heard the slightest sound uttered whilst these birds fly away if disturbed in the woods, or when they fly over the fields prey-hunting, when probably, and of necessity, they are always silent.—W. GYNGELL (Scarborough).

Peregrine Falcon in Warwickshire and Oxon.—A friend in South Warwickshire, just over our borders, sent me a young male Peregrine Falcon (*Falco peregrinus*), which had been shot on Dec. 3rd, 1904, while sitting on an elm-tree in a wood, by the keeper, who said the local Hawks had mobbed it. It is a good example of what falconers called a Red Tiercel, and is a true Passage Hawk, being supposed to have arrived with a number of "foreign" Wood-Pigeons which came into the district about that time. Whatever it had been feeding upon, it was in very high condition, for it weighed 1½ lb., but the only portion of the food inside it, Mr. Schumach thought could be recognized, and sent to me, was the foot and tarsus of a Thrush. The Tiercel measured 16·6 in. in total length; wing, 12·7 in.; cere and eyelids bluish grey, dashed with yellow; bill pale bluish horn, tip horn; legs and feet very pale dull yellow. The Peregrine Falcon is a regular visitor to the southern midlands on the autumn migration, living, I believe, largely on Wood-Pigeons, though Partridges are also taken, and, I think, Mistle-Thrushes, and perhaps some other birds. I once saw what I believe was a Peregrine Falcon attacking a bunch of travelling Starlings very high in the air. The Falcons which haunt the reservoirs prey upon the wildfowl. On Nov. 4th, 1898, I saw a beautiful blue Peregrine (a female from the size) fly low over Byfield Reservoir, causing a lot of Coots sitting on the edge to scuttle into the water in a great state of alarm. I heard one year of two Peregrines shot at different dates in November at Boarstall Decoy, where they would be very unwelcome visitors, and might render the fowl shy of the pond if they remained there long. During the severe weather at the end of November last year we were, one very cold day with snow on the ground, trying to get a couple of coveys driven over us from a big high-lying stubble; but a "big Hawk" upset the drive, causing

the birds to lie until almost trodden on, and then fly in all directions but the right one, "putting in" to the hedges as soon as might be. They were much more afraid of the Hawk (in front) than of the beaters. Posted where I was, I did not see the Hawk, but, from the description given by one of the guns, it was no doubt a Peregrine, and a "Falcon," although one beater, who was close to it, declared that it was "as big as a Goose." The birds which visit us in autumn are usually birds of the year (as stated in the excellent article on this bird in the fourth edition of 'Yarrell'), real "Passage" or "Peregrine" Hawks; but in winter, and on into March, I have known blue "Haggards" shot on several occasions.—O. V. APLIN (Oxon).

Pacific Eider in Orkney.—As the bird is not in existence, or at any rate cannot be produced, Mr. Robinson is hardly justified in stating (*ante*, p. 143) that the Eider which was shot some years ago by S. Sutherland establishes the occurrence of the Pacific Eider in British waters. Some of the species of *Somateria* resemble one another very closely, and nothing less than a detailed description of the specific characters can be deemed satisfactory evidence of the occurrence of one of these critical species. Sutherland's recollection of the bird is obviously vague, for in a letter referring to the Graemsay example he says:—"It had a very fine shaped V under the throat, a mark very seldom seen. I have seen it before, but very rare." Even if it be granted that he shot an Eider with a black chevron on the chin, the possibility remains that it was a King-Eider (*S. spectabilis*), a species of which at least four examples have been recorded from Orkney, or a Dresser's Eider (*S. dresseri*), a species which sometimes has a dusky chevron on the chin, and in other respects very closely resembles *S. v-nigrum*. Dresser's Eider is, judging from its geographical range, more likely to occur in British waters than is the Pacific species; it has, as a matter of fact, been obtained in Holland (*cf.* Saunders, 'Manual of British Birds,' 2nd edit. p. 460). Whatever the bird may have been which Mr. Robinson and his boatmen saw near Stromness in February last, it certainly was not a female Pacific Eider, for he describes it as smaller than a Common Eider, with a head which appeared to be almost white. The average measurements of *S. v-nigrum* exceed those of *S. mollissima*, but the females of the two species and of *S. dresseri* are practically alike in coloration, and can only be distinguished with certainty by the differences in the shape of the bare spaces at the base, and the feathered wedge in the centre of the upper mandible.—CHARLES OLDHAM (Knutsford).

Red Grouse in Anglesea.—On March 21st I picked up some freshly

plucked feathers of a Red Grouse (*Lagopus scoticus*) on a cliff-top at Carmel Head, North Anglesea, the work, presumably, of one of the local Peregrine Falcons. So far as I can ascertain, this seems to be the only evidence that the bird has occurred on the island. The nearest Grouse-moors (in Carnarvonshire) are some five and twenty miles away—a long distance for this species to stray at this season, and in fair weather; an instance perhaps of the survival of a migratory instinct now practically extinct.—S. G. CUMMINGS (Chester).

Do Partridges Migrate?—I asked this question in my 'Notes of an East Coast Naturalist,' pp. 54-58, and tried to answer it in the negative, somewhat against my convictions. As a matter of fact, almost yearly the French species (*Caccabis rufa*) "puts in an appearance"—I put it that way—in lesser or greater numbers in the spring. Chance time none are actually seen; in other years, sometimes for two or three seasons in succession, small flights are unexpectedly met with on the sand-hills near to the sea; I say unexpectedly, but when I was a lad we boys used actually to frequent the denes (sand-dunes) in April, searching in the furze and marram-tufts for them. I know it is stated that Lord Rendlesham and the Marquis of Hertford "introduced" the species into East Anglia in 1770, and another lot were turned adrift in 1823; but why do we not meet with the bird in other months than April or May? Its appearance, too, almost invariably coincides with stiff and persistent easterly winds. The birds also are usually so wearied and exhausted that it is not a difficult matter to run them down, and, as I have assisted doing so, I am not depending upon hearsay. Stevenson ('Birds of Norfolk') remarks on "a wandering instinct" in the French Partridge, and suggests that it attempts to leave our shores, but, misjudging distance and its powers of flight, attempts a return, and would thus naturally be regarded as a foreigner just arrived upon the coast. On the 19th ult. between thirty and forty were discovered on the sand-hills south of the town. The wind had been easterly and of some strength for some time. Now, I hold this, that the Quail, which is an acknowledged immigrant, has proportionately no greater power of wing than the Partridge, or the Gallinules, or the Rails—birds that often exhibit equal wing-weariness when met with directly after their arrival. Surely a journey across Channel, or even this part of the German Ocean, is not beyond its powers of endurance. I do not like to be dogmatic, but, with all due respect to Stevenson, and some of my good Norfolk friends, whose knowledge of bird-life, I freely admit, is greater than my own, I still incline greatly to the possibility and probability of its being migratory,

at least in spring. Whether any leave us in autumn is another question; the bird would then have lost its nesting instinct, and would probably be fat and well-favoured, and scarcely in a condition to depart. Whether any French Partridges were ever observed on our sand-hills before 1770, it is of course impossible for one to say, as we have no contemporary records to be guided by. I should like to have the opinion of other correspondents living on the east and south-east coasts of England as to whether similar or any satisfactory conclusions have been arrived at on this subject.—A. PATTERSON (Ibis House, Great Yarmouth).

Notes on the Ornithology of Richmond Park, Surrey.—Referring to my notes on this subject (*ante*, p. 147), I wish to point out an error, and also give some additional records, which will raise the number of birds to seventy-six. On p. 149 I find that I should have written Lesser Redpoll (*Linota rufescens*) in place of Linnet (*L. cannabina*). The additional records are :—

KINGFISHER (*Alcedo ispida*).—Sometimes to be seen on Beverley Brook, generally the part which runs through the paddocks between the Roehampton and the Robin Hood's gates. One of the keepers informed me that it is occasionally seen on the Penn Ponds in very hard weather.

HOODED CROW (*Corvus cornix*).—Very rare. Saw one between the Sidmouth Plantation and the Ponds on March 12th.

STONECHAT (*Pratincola rubicola*).—This species is more numerous of late.

WHITE WAGTAIL (*Motacilla alba*).—Occasionally met with. A friend of mine saw one on April 17th not far from Richmond Gate.

GREY WAGTAIL (*M. melanope*).—Rather a rare winter visitor, though a pair generally put in an appearance each year.

GOLDFINCH (*Carduelis elegans*).—Although rather rare, this beautiful bird is on the increase, and I have seen several this year. I may mention that I counted fifteen in a flock at Ripley on March 19th, and have noted them in one or two other localities, principally at Oxshott. This evident increase is due no doubt to the beneficial Wild Birds Protection Acts.

LINNET (*Linota cannabina*).—Generally to be seen in the autumn and winter months, but it does not, as far as I can ascertain, breed within the precincts of the Park.

REED-BUNTING (*Emberiza schanclus*).—Very rare. Have only seen this species once—on April 16th.

SHOVELER (*Spatula clypeata*).—There are a pair on the Ponds which

were obtained from St. James's Park, London. I mention this as a safeguard against their being mistaken for wild birds.

TUFTED DUCK (*Fuligula cristata*).—Saw three fine males and two females on March 12th. This bird, in common with other species of the *Anatidæ*, evidently calls in now and again whilst on migration.

POCHARD (*F. ferina*).—A party of sixteen on the 18th, six (four males and two females) on the 25th and 26th of March, and three (one male and two females) on April 9th. Since the 16th a pair have been there, and I trust will stay to breed.

SCAUP (*F. marila*).—I have never noticed this species personally, but Mr. Dalgliesh saw a number on March 27th, 1904 (*vide* Zool. 1904, p. 193).

BLACK-HEADED GULL (*Larus ridibundus*).—Generally to be seen at the Ponds during the winter.

GREAT CRESTED GREBE (*Podiceps cristatus*).—I first noticed the Grebes this year on Feb. 26th (they arrived at least one day before this—*cf.* Dalgliesh, *ante*, p. 109); one was an adult male, and the other a female in winter dress. On March 4th they had disappeared (it was very cold just before this date); perhaps this accounts for their disappearance. However, on the 12th there were two adults, which have remained, and are now breeding. They have built their nest moored to the overhanging branches of a willow which grows on the island. I first noticed the female bird sitting on April 9th, and the male bird continually adds to the size of the nest. About March 25th a report appeared in one of the local papers that there were three Grebes on the Ponds, but after a prolonged search I failed to discover the third. However, on April 15th a friend saw three, and she concludes that the third is one of last year's young. I should like to ascertain if any reader of 'The Zoologist' can confirm the report made in March that there were three Grebes on the Ponds.—L. B. MOURITZ (6, Esmond Road, Bedford Park, W.).

Notes from Shetland (from June, 1904, to April, 1905).—

AVES.

STOCK-DOVE (*Columba ænas*).—One at Halligarth on June 22nd, 23rd, 24th, and 25th. I saw the bird several times each day. One has to be very careful about the identity of birds described as "Stock-pigeon" or "Stock-doo" by Shetlanders; the word "stock" is commonly used by natives to describe large or common species.

LINNET (*Linota cannabina*).—One at Halligarth, Aug. 7th. This bird is very rare in Shetland. It was first identified by Mr. Harvie-

Brown a few years ago. The name "Linnet" is invariably bestowed on the Twite by Shetlanders.

GREAT NORTHERN DIVER (*Colymbus glacialis*).—This species has been very plentiful round the coast during autumn and winter. A few are still to be seen (April 30th, 1905). It has, I regret to say, fallen to my unhappy lot to have had many opportunities of examining recently killed specimens. In my experience the bill, usually described as "horn-colour," has not been so. I have always found it more or less bluish white, except towards the end of the upper mandible, which is horn-colour. The bluish white rapidly changes (within a few hours) to reddish purple, and then, after a day or two, to dull horn-colour. The inside of the tarsi and toes, and also the middle portion of the webs, are also bluish white, very similar to those of the Long-tailed Duck; this white soon changes to brownish black. With regard to this bird sitting upright on land, and also as to its mode of progression on land, it certainly does assume an erect attitude, occasionally at least. On Oct. 14th I surprised one sitting a few yards from the sea on some smooth ground; it rose on "tip-toe," and with head erect, bill in the air, and moving feet and outstretched wings, very rapidly reached the sea long before I even arrived at the spot *where it had been*. It reminded me somewhat of an excited old gander as it moved over the ground.

WHOOPEE-SWAN (*Cygnus musicus*).—Heard passing overhead on Nov. 8th, at 8 a.m. Seen going north, March 10th. One seen April 4th.

WOODCOCK (*Scolopax rusticula*).—A few seen during December.

SNOWY OWL (*Nyctea scandiaca*).—One seen on Oct. 29th, and one April 4th.

PEREGRINE FALCON (*Falco peregrinus*).—A wounded one, with wing broken, brought to me alive on Nov. 21st. I had to chloroform it to disengage its claws from the basket in which it came, and also for my own protection while I repaired the wing. It is still alive and very tame, eats mice, birds, scraps of meat, and fresh fish.

CARRION-CROW (*Corvus corone*).—Saw five, along with two Hooded Crows, close to the roadside near Haroldswick at 2 p.m. on Feb. 25th. These are the first I have seen in Shetland. N.B.—It may be suggested that these were young Rooks, but this was not so. I was within a few yards of them, and was able to see them perfectly, and to describe to my little daughter the chief differences between the appearance of Rooks and Carrion-Crows.

ROOK (*C. frugilegus*).—Arrived March 4th. A few still about.

JACKDAW (*C. monedula*).—One seen at 11 a.m. on Feb. 3rd ; another (perhaps same one) on April 1st, at same place.

RAVEN (*C. corax*).—Young birds flying, April 22nd.

BLACKBIRD (*Turdus merula*).—Building at Halligarth, April 16th.

GREAT SKUA (*Megalestris catarrhactes*).—Arrived April 11th.

RICHARDSON'S SKUA (*Stercorarius crepidatus*).—Arrived April 13th.

PUFFIN (*Fratercula arctica*).—Arrived April 18th.

MOORHEN (*Gallinula chloropus*).—One, April 28th.

I would take this opportunity of warning egg-robbers that in Shetland more elaborate precautions are being taken to limit their depredations than ever before, and that, while true naturalists will always be welcomed and helped as heretofore, mere collectors and dealers will be at least "discouraged" in their nefarious trade.

PISCES.

It is somewhat difficult to get any information about the fishes frequenting the coast, the local boats having almost entirely given up line-fishing, or, indeed, any fishing but for Herrings in summer. The trawlers have during the last two months reported to me the following :—

Halibut, Ling, Sole (Lemon), Whiting, Flounder, and Haddock, plentiful. Cod, rather scarce ; Skate, plentiful ; Red and Grey Gurnard, very plentiful a few miles north-east from here ; Bergylt, a few ; Bream (Sea), one brought to me April 10th.—T. EDMONDSTON SAXBY (Baltasound).

Early Migrants near Chester. — The arrival of the Whinchat (*Pratincola rubetra*) on April 14th, and the Land-Rail (*Crex pratensis*) on April 15th, are, I think, worth recording for this district, both species being about a fortnight before their usual time. On April 28th I also saw, at close quarters, a Turtle-Dove (*Turtur communis*) in a tree by the city walls. As a rule, this migrant arrives here with unfailing regularity at the beginning of the second week in May. I may mention here that this species will occasionally soar with motionless wings, like a Ring-Dove, returning to the same perching-place from whence it started—a habit which seems to be little known, or at any rate seldom noted.—S. G. CUMMINGS (Chester).

THE ZOOLOGICAL SOCIETY'S GARDENS.

THE most interesting addition to the Society's Gardens during the month of April was a young female Giraffe, purchased from Captain Phillips, who brought her from a spot midway between Zinder and Gummel, near Lake Chad, in Northern Nigeria. She stands about eight feet high at the head, and is believed to be about fourteen months old. On the evidence of its locality this Giraffe has been provisionally referred to the race named *Giraffa camelopardalis peralta* by Thomas, who based it upon the skull and limb bones, which indicated an animal of exceptional height. Now, one of the most interesting points about our new Giraffe is its striking similarity to the Nubian or Eastern Soudanese form, the typical Giraffe described by Linné; and, since we know that certain animals, like the Sabre-horned Oryx, range from Senegambia to the Eastern Soudan, it would not be surprising if the same were found to be true of the Giraffe. Moreover, since the specimen named *peralta* came from a spot near the junction of the Binué and Niger Rivers, a totally different "station" from the neighbourhood of Lake Chad, it is highly probably that our new Giraffe is not "*peralta*" at all, but a representative of the typical race. The rarity of Giraffes in Nigeria is attested by the fact that in the beginning of 1904 the only positive evidence of the existence of these animals in that region of Africa was supplied by the bones above alluded to as described by Mr. Thomas. There are now examples of three distinct races of this most attractive ruminant in the Gardens, namely, *Giraffa camelopardalis ? peralta*; *G. c. antiquorum*, from Kordofan; and *G. c. wardi*, from the Sabi River, South Africa.

Mention may also be made of a pair of four-horned Antelopes, received in exchange, and of a Huanaco from Punta Arenas, presented by Mr. Moritz Braun and Capt. Crawshay. Four-horned Antelopes do not always deserve their name, the anterior pair of horns being frequently absent, as was the case with the example, deposited by His Majesty, which died in the Gardens last year. In the buck of the pair recently received, however, the anterior horns are well developed. The Huanaco is a welcome addition. The Society now possesses a specimen of each of the two known wild species of Llama, namely, the Vicuña and the Huanaco, and also examples of one of the domestic races, the true Llama. The accession of an Alpaca would complete the series. Several Monkeys have also been received, the most attractive amongst them being a mother and baby Anubis Baboon.

The only birds to which attention need be particularly drawn are a pair of Indian Concave-crowned Hornbills. As was pointed out to me by Mr. Bertling, the head-keeper, the cock and hen differ from each other in one curious particular, namely, the colour of the iris of the eye, which in the hen is greyish yellow, and in the cock deep red.

R. I. P.

OBITUARY.

ALPHEUS SPRING PACKARD.

WE greatly regret to record the death of this accomplished naturalist, and we reproduce an excellent biographical notice from 'The American Journal of Science' for March:—

"Alpheus Spring Packard, Professor of Zoology and Geology in Brown University, died at his home in Providence, R. I., Feb. 14th, 1905, at the age of nearly sixty-six years.

"Prof. Packard was a son of the late Prof. Alpheus Spring Packard, of Bowdoin College, and was born at Brunswick, Me., Feb. 19th, 1839. He was graduated from Bowdoin in 1861, and from the Maine Medical School and the Lawrence Scientific School in 1864. At Cambridge he was one of that remarkable group of students—Hyatt, Morse, Packard, Putnam, Scudder, Shaler, and Verrill—associated with the elder Agassiz in the early sixties. He served for a time, in 1864-5, as Assistant-Surgeon in the U. S. Army, but never became a regular practitioner of medicine, his life being devoted to his chosen work in zoology and geology. An enthusiastic field naturalist, collector, and explorer, as well as a very voluminous author who wrote on a remarkably wide range of subjects, he was specially distinguished as an entomologist. He is most widely known, and will probably be longest remembered, for his original work on insects, and his several textbooks on entomology and zoology. Early in his career he accepted the theory of evolution, and later became an ardent neo-Lamarckian. One of his last works was 'Lamarck, the Founder of Evolution; his Life and Work.' He was one of the founders of the 'American Naturalist,' for twenty years its chief editor, and a constant contributor to its pages. Prof. Packard was a member of the National Academy of Sciences, and of many European societies. Before his appointment at Brown, in 1878, he was successively Librarian and Custodian of the Boston Society of Natural History, Director of the Peabody Academy of Science, State Entomologist of Mass., and a member of the U. S. Entomological Commission.—S. I. S."

NOTICES OF NEW BOOKS.

A Student's Text-Book of Zoology. By ADAM SEDGWICK, M.A.,
F.R.S. Vol. II. Swan Sonnenschein & Co., Ltd.

THE first volume of this work was noticed in 'The Zoologist' for 1898. The second has just been published, and a third volume—dealing with the Tunicata, Enteropneusta, Echinodermata, and Arthropoda—is in the press; the present volume being devoted to the Chordata—Pisces, Amphibia, Reptilia, Aves, and Mammalia.

It would be beyond our scope to give a *résumé* of the classification adopted in this cautious and excellent text-book, or to deal with the anatomical and morphological details which form its substance; these are for its reader—the biological student, an individual who is now provided with material that would have gladdened the heart and differently influenced the career of many young zoologists in the past generation, when an evolutionary attitude was not considered to be always safe in biological treatises. Now it is no longer a question as to whether a writer in this field is an evolutionist, but rather in what biological grade he works, or to what evolutionary plane he has attained. Mr. Sedgwick, in his preface, asks for lenient judgment if in some pages he has "seemed to take up an unduly critical position with regard to views widely prevalent at the present time on some aspects of organic evolution," a position in which many others find themselves, who, holding the evolutionary faith or conception, do not feel compelled to accept every proposed interpretation, nor do they hold that such non-acceptance is biological heresy. We often seem to have reached the stage of enjoying a new theory as much as the enunciation of an hitherto unknown fact, and though theologians sometimes tell us we are reincarnate decadent Romans,

they might with equal plausibility describe some naturalists as having once belonged to that community of leisured Athenians, who, we read, devoted their time "either to tell, or to hear some new thing"; it is the evolutionist who is most scandalised by some of the current pseudo-evolutionary guesses.

In the Mammalia, though Mr. Sedgwick does not devote too many pages to his order "Primates," he deals with it in a most suggestive and interesting spirit. He recognizes four families—*Hapalidæ*, *Cebidæ*, *Cercopithecidæ*, and *Anthropomorphidæ* (*Simiidæ*), in which he places *Homo*; and he divides the human race into three primary groups—Negroid, Mongolian, Caucasian. Whether this is a permanent anthropological classification or not, but few will disagree with the remark, and one which constructors of genealogical trees may be asked to notice, that "it is a striking commentary on the attempts of modern naturalists to discover the pedigrees of different species of animals that, with our relatively full knowledge of man, historical, anatomical, and ethnological, we are unable to agree upon a zoological classification of him which shall show the consanguinity of the different races." Our author concludes the subject, and also this excellent volume, by two eulogistic notices of our genus by Shakespeare and one of the Hebrew Psalmists; but is it not probable that even intellectually we take too high a view of the capacities of *Homo* in comparison with those of some other animals of which we do, and can only know, at present, so little? Is it impossible for an evolutionist to imagine that the present mammalian age, with even *Homo*, may, in some undreamed and unimagined futurity, be relegated in importance to one great evolutionary succession to the Reptilian era as we think of it to-day? And this is not materialism, but its antithesis. There can be no cessation in the progress of evolution; stability may be apparent, but finality is beyond the bounds of the conception. To use the words of a recent writer:—"The mysterious battle, physical, moral, mental, spiritual, proceeds and must proceed for ever. Time is cheap, and we have all eternity before us" ('Hibbert Journal,' April, 1905).

British Bird Life; being popular sketches of every species of bird now regularly nesting in the British Isles. By W. PERCIVAL WESTELL. T. Fisher Unwin.

MR. WESTELL is becoming quite a prolific writer, and it is probable that this is the best book he has yet written. But does it supply a want? Sir Herbert Maxwell, in an introduction to the volume, appraises its value as "one which may be of lasting profit and pleasure to children reared in great towns." If this is so, the book will not have been written in vain.

It is somewhat remarkable in the domains of British ornithology and entomology, that the study of our birds or butterflies and moths should create such a sudden responsibility for writing another book on the subject. And when this resolve takes the form, as it usually does, of producing a handbook relating to all the members of our avian or lepidopteral fauna, compilation by necessity becomes the pronounced factor; for who can record sufficient original observation, or produce more new material than would occupy but few pages indeed? Now the art of judicious compilation is not a common gift of the gods! It demands encyclopædic reading with the judicial faculty of estimating what to ignore, what to pass by with a reference, and what to detail; it must also be abreast of the latest facts and records. Acting on this standard, it is not hypercritical to say that much might be taken out of this book as somewhat jejune, and much might well be put in the place of such lacunæ. According to Mr. Westell, "Works on so-called British birds are many, but books solely devoted to those species which regularly nest in our country are very few," and he has thought it well to add one more to the number. We have carefully read its pages, which are interesting, and contain what to some may be new; they also exhibit the writing of one who truly loves his birds and their environment; the illustrations are unequal in value, the photographs taken direct from nature contrasting very favourably with some "original drawings"; while the opinion of its sponsor that it may "be of lasting profit and pleasure to children reared in great towns," is, we venture to think, a fair and candid judgment.

The Fauna of British India, including Ceylon and Burma.
Edited by W. T. BLANFORD. Butterflies.—Vol. I. By
Lieut.-Col. C. T. BINGHAM. Taylor & Francis.

IN dealing previously with some of the families of Hymenoptera, Col. Bingham was, as were several other writers in this series, more or less of a pioneer, for that order of Insecta is still very incompletely represented in collections from British India. In butterflies the position is reversed: not only is immense material available for study, but much literature on the subject has already appeared, not only relating to the confines of the faunistic area included in the purview of these volumes, but also of neighbouring zoological territories; while the British Museum possesses a worked and classified collection which is unrivalled. In addition to these advantages, Col. Bingham has collected on the spot, and has aroused the enthusiasm of quite a number of other field entomologists, who have aided his task by the collection of specimens. Consequently we now have a digest rather than a contribution, a critical summary in place of the description of undescribed material, and an enumeration of species (if the author will allow us to use the term), which should at least, till the day arrives when their transformations shall be fully studied and recorded, be regarded with some amount of finality. We can therefore readily understand that the author of this book must have felt a considerable responsibility, and in going over the work of other writers with more limited opportunity, he must have frequently concluded that all that was recorded as new was not invariably true, and also the reverse. And this particularly applies to the great work now being published by Moore, whose specific and generic propositions receive little acceptance in the present volume, older views as to the sequence of families have acquired considerable modification, and Col. Bingham has also constructed his provisional genetic tree arising from a "Hypothetical Moth Ancestor." The families *Nymphalidæ* and *Nemeobidæ* are completed, and two more volumes are estimated as necessary to conclude the subject.

Col. Bingham has discarded the use of the term "species" as being tainted with "the evil connotations of pre-Darwinian times," and has adopted in its place another term—"form."

Perhaps, however, terms are immaterial in comparison with the conception which they convey, and as this depends not on the counters used, but on the plane of thought at which one has arrived, a change of word may not help so much as desired. If we do not use the word "species," why use the word "genus"? the last being a little more artificial than the first, at least in a philosophical sense. However, the writer shares with the author his dislike of definitions which may, or already have developed into rigidities, but at the same time thinks it better to enlarge the conception of a term rather than to duplicate it by another word.

This very useful volume possesses ten coloured plates, and some hundred photo-blocks distributed in the text.

EDITORIAL GLEANINGS.

"*A Rook's Execution.*—On Wednesday morning about eight Rooks came into Christ Churchyard, Skipton, and tore in pieces the nest a Rook had made in a tree overhanging Cross Street. They pecked the Rook to death, broke the eggs upon which she was sitting, and she and the twigs were cast to the ground. Many neighbours saw this unusual occurrence. Natural history tells us of similar circumstances, but it falls to the lot of few to witness such an execution. Some Rook-law she had evidently broken, for which the death penalty was attached."—*The Craven Herald*, April 28th.

"*Robins' Nest on Waggon-axle.*—A few weeks ago a colliery waggon stood idle for a few days at Seghill, Northumberland, and during that period two Robins built their nest on its axle. Six eggs were laid, and then the waggon started on its journeys again. The parent birds followed it all the way to the Tyne, and their excited hovering round attracted such attention that an investigation was made, which resulted in the discovery of the nest. The waggon has now been placed on a siding to await the convenience of its feathered denizens, and six lusty young Robins have been hatched."—*Evening Standard*, May 8th.

THE 'Sussex Daily News' of March 29th says that during the past winter members of the Bodle Street and District Rat and Sparrow Club," near Herstmonceux (Sussex), killed 4148 Rats and Moles, 40 Stoats, 40 Rooks, Jays, Bullfinches, Magpies, and Hawks, 615 Blackbirds, Larks, and Linnets, and 2994 Sparrows, Starlings, "Greybirds," and Chaffinches. The member who secured most heads and tails got a prize of £2, the second £1, third 15s. 6d., and fourth 7s. 6d. The rules of the Club provide that a fine shall be imposed on members failing to bring in twenty units every fortnight. Rooks, Jays, Bullfinches, Magpies, Hawks, and Stoats count three points; Rats, Moles, Blackbirds, Larks, and Linnets, two; Sparrows, Starlings, "Greybirds," and Chaffinches, one.

As zoologists, we wish no prosperity to the "Bodle Street and District Rat and Sparrow Club." Herstmonceux is a locality which has shrined a more gentle and literary spirit.

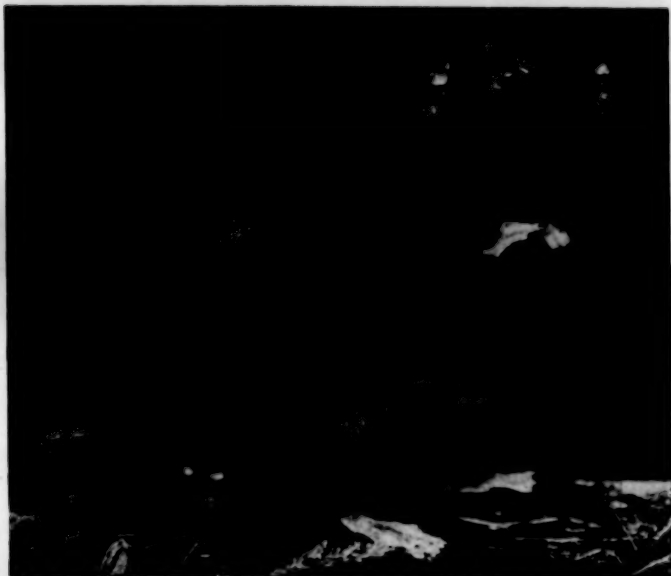
WE learn that a Report on the Natural History Collections made in the Antarctic Regions by the 'Discovery' Expedition is to be published by the Trustees of the British Museum, and edited by Professor E. Ray Lankester, F.R.S., Director of the Natural History Departments. Already a long list of the names of naturalists are announced, to whom the working out of the collections has been entrusted. All enquiries concerning the zoological and botanical collections should be addressed to Mr. F. Jeffrey Bell, British Museum (Natural History), Cromwell Road, London, S.W.

WE have received the Report, 1903-4, of the Australian Museum (New South Wales). The acquisition of specimens continues to be dependent mainly on donations, supplemented by small purchases; by exchanges with other museums, and with private collectors; and by collections, the result of voluntary efforts on the part of members of the Museum staff and correspondents. The Curator having had opportunities of visiting Milton, the Darling River, and some of the Caves, and Mr. Chas. Hedley, of visiting Northern Queensland, with the authority of the Board, the result was the acquisition of numerous specimens for the Museum collections, and much valuable information. The additions to the library number 599 volumes, besides pamphlets and unbound parts of periodicals; and we notice in the balance-sheet that no smaller a sum than £422 18s. has been devoted to this excellent object.

"POSTAL ANOMALIES and their Effects" is the title of a reprint of the speeches made in a debate in the Senate of Canada on Feb. 22nd of this year. Its importance to naturalists is found in the detrimental action of heavy postage in preventing a free circulation of scientific and other magazines in Canada. We learn from the speech made by Hon. Sir George Drummond, that a most serious discrepancy occurs in the postage rates for newspapers, magazines, and periodicals, which Canada conveys to England at the rate of half a cent per pound, while the rate from England to Canada is no less than eight cents per pound, and the rate from the United States to Canada is one cent per pound. It is difficult to imagine on what principle the Imperial

Government proceeds in charging a rate of eight cents per pound. It is in itself a monstrous rate, equivalent to 175 dols. per ton, or say £36 per ton. It is well to consider the effect of this prohibitive rate, as compared with the rate charged by the United States, on the Canadian bookseller and distributors. The Canadian bookseller has this before him: If he accepts an order for a subscription for an English magazine or illustrated paper, he is in the first place charged eight cents a pound by the British post-office, and then he has to pay to the Canadian post-office one cent a pound in addition for the purpose of having his wares distributed, unless, indeed, he and the subscriber happen to be in the same city, when he can do it by hand without the intervention of the post-office. So he has to compete with an institution which can do business for three cents a pound, while, if he employs the legitimate post-office facilities, the postage on his wares amounts to nine cents a pound.





THE BLACK ALEXANDRINE RAT, subsp. nov. (*Mus rattus ater*).

(From photographs by Douglas English, F.R.P.S.)